

## MINUTES OF THE 27<sup>th</sup> CEOS SIT MEETING

27<sup>th</sup>-28<sup>th</sup> March 2012  
La Jolla, USA

### Main SIT-27 Discussion Points, Outcomes and Actions

The main discussion points, outcomes and actions from the SIT-27 meeting are as follows:

1. CEOS should begin preparing for its bi-annual representation at COP-18, and related SBSTA meetings to take place in May/June in Bonn, and December 2012 around COP-18. **SIT 27-1, 27-2** [Item 2]
2. CNES was elected as the SIT Vice Chair for 2012-2013 in a special CEOS Plenary session, and will go on to succeed NASA as SIT Chair for the 2014-2015 term. **SIT 27-3** [Item 4]
3. Richard Moreno (CNES) was nominated to the WGISS Vice Chair role and CEOS accepted. **SIT 27-4** [Item 5]
4. Nominations are open for the CEO and DCEO roles through end of May. **SIT 27-5** [Item 6]
5. CEOS should work to contribute to the GEO Post-2015 Working Group, and needs to be proactive to ensure that its views are reflected, and its current and planned activities considered. **SIT 27-7** established a related strategy committee. [Item 8]
6. The Sea Surface Temperature Virtual Constellation (SST VC) Implementation Plan was approved, **SIT-27-8. SIT 27-9** encouraged CEOS Agencies to nominate representatives to the SST VC Team. [Item 9]
7. **SIT 27-10** calls for CEOS Members to provide the Carbon Task Force with feedback on the draft chapters of the CEOS Carbon Strategy. [Item 10]
8. An Ad Hoc CEOS team to take responsibility for working with GEOGLAM to further develop the space-based observations component suggested by the draft Work Plan. **SIT-27-11** through **SIT-27-13** agreed to coordinate CEOS support to GEOGLAM. [Item 11]
9. Actions **SIT 27-14** through **SIT 27-16** were agreed to coordinate CEOS presence at Rio+20. [Item 12]
10. A roundtable review of the membership and participation of the Virtual Constellations and Working Groups took place in order to establish where strengths, weaknesses, and issues with participation may lie. [Item 13]
11. The Troika was tasked with helping to try to improve engagement with Chinese and Russian agencies with the goal of more participation by these agencies in CEOS meetings, Virtual Constellations, and Working Groups. **SIT 27-17 and SIT 27-18** [Item 13]
12. New CEOS Essential Questions were proposed: how CEOS engages with “peer” organisations; how can CEOS formulate a set of internal principles that remain coherent without reference to peer and partner organisations; and, whether development of a “CEOS satellite” should be considered. [Item 14]
13. Actions **SIT 27-19 and SIT 27-20** were agreed to coordinate the next steps of the CEOS Essential Questions process. [Item 14]

14. A table summarising responsibility and participation for four key top-level CEOS functions was generated based on discussion during *[Item 15]*.
15. Following on from the pre-SIT workshop devoted to the VCs and WGs, the dialogue between CEOS leadership and the WG and VC leads continued to expand during sessions 16-18. **SIT 27-21** through **SIT 27-24** *[Items 16-18]*
16. The CEOS Self-Study recommendation stressing the need for increased focus on physical outputs by the Virtual Constellations and Working Groups in support of priorities like GFOI and the Climate Architecture was discussed, and generally agreed. *[Item 16]*
17. The plans for WGClimate over the next year or two, and specifically where VC and WG support is anticipated were reviewed. *[Item 16]*
18. The discussion on Working Groups and Virtual Constellations noted that GEO must strive towards high profile achievements in the closing years of its 10-year plan to ensure political and financial support for its continuation post-2015. CEOS has a role in support of delivery and must be pro-active in defining and progressing on the outcomes. *[Item 18]*

## 1 Welcome and Opening Remarks

Mike Freilich welcomed SIT participants to the Scripps Institution of Oceanography in La Jolla, California. He gave an overview of the agenda, noting that one of the outcomes of the CEOS Self-Study (CSS) was a recommendation to realign SIT meetings within a framework that allows more time for substantive discussion of key issues. The meeting was accordingly divided into four sessions:

**SESSION 1: Welcome and Essential Business** covering the essential business of the SIT, including several key reports and issues requiring decisions and direction.

**SESSIONS 2 and 3: CEOS Self-Study Implementation** discussion sessions on CEOS membership and participation, essential strategic questions that scope and define the CEOS mission, and CEOS structure and governance. The sessions are not seeking immediate decisions on changes, but rather strategic discussion of options amongst participants - as inputs to the formulation of proposals.

**SESSION 4: CEOS Virtual Constellations (VC) and Working Groups (WG)** - continuing to expand the two-way dialogue between CEOS leadership and the VCs and WGs as recommended in the CSS, and with discussion on refocusing the CEOS VCs and WGs around common and consolidated CEOS priorities, specifically looking at support to physical outputs (*eg.* ECV support).

## 2 Review of Open Action Items

Stephen Ward reviewed a selection of the open SIT-26 actions, reporting specifically on the following:

**26-5:** Relating to preparations for Rio+20, to be covered under item 12.

**26-6:** Relating to the Water Cycle Initiative (WCI), Osamu Ochiai (CEOS Water SBA Coordinator) noted that during the CEOS-GEO Action Workshop in February, actions were identified leading to the production of a GEO Water Cycle Strategy document. Osamu noted that he had provided a more detailed update at the SEC-162 meeting.

**26-15:** Stephen noted that interested CEOS Agencies should nominate representatives to the SST VC Team. There has been no response from CEOS Agencies to date, but this is a key mechanism and point of engagement for GHRSSST and the SST VC.

**26-17:** Greg Stensaas noted that nominations for a WGCV Vice Chair are still open.

The table below summarises the most recent status of the SIT-26 action items.

No.	Action	Due date
SIT 26-1	CEOS Agencies to urgently review draft Version 0 of the 2012-2015 GEO Work Plan, and send comments to the CEO for coordination.	COMPLETE (26 May 2011)
SIT 26-2	CEOS Agencies to undertake best efforts data acquisitions in support of the 2011 coverage requirements of the GEO FCT.	COMPLETE
SIT 26-3	CEOS Agencies to review and feedback on the draft 'CEOS Strategy for Space Data Coverage and Continuity in Support of the GFOI and FCT Task'.	COMPLETE SDCG established at Plenary. SDCG-1 Meeting held 6-8 March
SIT 26-4	Carbon Task Force Co-Chairs to report progress to the CEOS Plenary.	COMPLETE Further update at SIT-27
SIT 26-5	CEOS Chair to work with CEOS and GEO Secretariats to develop a planning process for CEOS inputs and outcomes in relation to Rio+20.	Ongoing To be reported under item 12
SIT 26-6	CEOS SIT Chair to identify a CEOS Agency to lead efforts on the integration of satellite observations and data in support of the Water Cycle Integrator initiative. CEOS Agencies encouraged to support regional GEO Water Workshops currently in planning.	GEO Water Strategy Report initiated. JAXA as Water SBA Coordinator is leading the CEOS interface.
SIT 26-7	Guy Seguin to report to CEOS Plenary on progress towards the GEO Supersites initiative, including outcomes of the June coordination meeting and recommendations for the way forward.	COMPLETE CEOS Plenary
SIT 26-8	CEOS Agencies encouraged to be represented in the JECAM Space Data Coordination meeting (21-23 June, Ottawa) and to establish points of contact for JECAM.	COMPLETE GEO-GLAM update provided to SIT-27
SIT 26-9	CEOS Agencies to provide comments on the proposed new GEO Task on polar ecosystems, the CEOS role therein, and expressions of interest in participation and support.	COMPLETE
SIT 26-10	WGISS, in coordination with SIT Chair, to enable CEOS IDN metadata accessibility via the GCI and to propose a plan for maintenance of this capability.	COMPLETE CEOS Plenary
SIT 26-11	CEOS Agencies to register metadata describing available datasets made available to the GCI in the IDN.	COMPLETE CEOS Plenary
SIT 26-12	CEOS Agencies encouraged to ensure datasets meeting DataCORE criteria are added to the GCI and corresponding product catalogues and repositories interfaced.	COMPLETE
SIT 26-13	Mitch Goldberg to remind CEOS Agencies of the public review period of the GCOS Satellite Supplement and to develop a consolidated commentary for GCOS.	COMPLETE
SIT 26-14	CEOS Agencies encouraged to review and respond to the draft report of the Climate Architecture Writing Team (expected 12 Sept).	COMPLETE
SIT 26-15	CEOS Agencies invited to nominate representatives to the SST VC Team.	OPEN – NO RESPONSE
SIT 26-16	SST VC leads to submit their Constellation proposal document in	COMPLETE

	time for consideration during a SIT session at CEOS Plenary.	
<b>SIT 26-17</b>	<b>CEOS Agencies encouraged to provide nominations to WGCV Chair for the WGCV Vice-Chair, with the role commencing at WGCV-34 (February 2012, Australia), and transition to WGCV Chair at WGCV-35 (September 2012, TBD).</b>	<b>OPEN</b>
<b>SIT 26-18</b>	<b>WGCV Chair to prepare a detailed proposal to augment QA4EO capacity and requesting CEOS agency resources.</b>	<b>COMPLETE</b>
<b>SIT 26-19</b>	<b>WGCV to provide a minimum instrumentation list and suggested activities for CEOS recommended instrument Cal/Val sites.</b>	<b>OPEN</b>
<b>SIT 26-20</b>	<b>Incoming SIT Chair to manage execution of the CEOS Self Study and to deliver a report to CEOS Plenary.</b>	<b>COMPLETE</b>
<b>SIT 26-21</b>	<b>CEOS Chair, in consultation with CEOS SEC, to represent CEOS interests in the debate around formulation of the GEO working structures for the new WP.</b>	<b>COMPLETE</b>
<b>SIT 26-22</b>	<b>CEOS Chair, in consultation with CEOS SEC, to explore options for CEOS presence and input at COP-17.</b>	<b>COMPLETE</b>
<b>SIT 26-23</b>	<b>CEOS Chair to establish and oversee a small study team charged with the drafting of terms of reference for a new WG - being a merger of WGEdu and Data Democracy.</b>	<b>COMPLETE</b>
<b>SIT 26-24</b>	<b>CEOS Chair to invite Principals to be represented at a WGEdu / Data Democracy [update: now known as WGCapD] strategy planning meeting to be held in Washington in September around the SIT workshop.</b>	<b>COMPLETE</b>

Mark Dowell provided an update on progress towards CEOS representation at COP-18. At COP-16, SBSTA had asked CEOS to provide updates every other year on CEOS support to the GCOS IP. This will be an opportunity to showcase the Climate Architecture document, and also the Earth Observation Handbook.

Mark will continue to coordinate CEOS representation to COP, but asked that CEOS Agencies contact their national delegations to COP/SBSTA with a view to contributing. He noted that he will work with the EC and others interested in considering a CEOS booth and/or side event. Stephen Ward noted that he had engaged with the UNFCCC SEC on the topic of more formal CEOS representation, but it appears as though the current ad-hoc arrangement will persist. Adrian Simmons noted that GCOS and CEOS could liaise on side events at COP-18. Brent Smith noted that Thelma Krug (Brazil) has been helpful in the past in supporting CEOS representation at COP and SBSTA. Brent also noted that CEOS should plan to engage with SBSTA meetings held each year in the May/June timeframe in Bonn, Germany.

<b>SIT 27-1</b>	<b>CEOS Agencies to inform Mark Dowell on who from their Agency plans to attend COP and/or SBSTA events in 2012, and provide Mark with any specific agency inputs for SBSTA.</b>	<b>May 2012</b>
<b>SIT 27-2</b>	<b>Mark Dowell, in coordination with SEO, will continue to coordinate preparation of CEOS engagement at COP-18 and the related SBSTA meetings, including the application for side events.</b>	<b>December 2012</b>

Stephen referred SIT participants to the following table, which summarises the current status of CEOS 25<sup>th</sup> Plenary Actions – these items were not reviewed in detail.

<b>No.</b>	<b>Action</b>	<b>Due Date</b>
------------	---------------	-----------------

25-1	The CEOS web team (SEO) and CEO to update the CEOS membership and contact lists to include Global Geodetic Observing System (GGOS) as an Associate, and Netherlands Space Office (NSO) as a Member	December 2011 COMPLETE
25-2	SST-VC Team to prepare a full Implementation Plan, per the Constellations Process Paper, in time for review at SIT-27	Covered under item 9 SIT-27
25-3	CEOS Agencies should work with the CEOS IDN team to register their data collections	CEOS-26
25-4	CEOS Agencies are encouraged to support the long-term funding necessary for the CWIC development & operations, and to work with WGISS to become a “CWIC Partner”	CEOS-26
25-5	WGISS should develop CWIC guidelines for future data partners to understand requirements	COMPLETE SIT-27
25-6	WGISS to engage related agencies and to lead an investigation into the opportunities and obstacles for the interoperability of HMA and CWIC, providing a report and recommendations to CEOS-26	CEOS-26
25-7	CEOS Chair and SIT Chair, in coordination with CEOS SEC, to ensure CEOS is kept informed and engaged in the post-2015 GEO planning process	CEOS-26
25-8	CEOS Agencies invited to nominate additional authors in support of the CEOS Carbon Strategy report – contact the Carbon Task Force co-leads	To be Covered Thursday
25-9	CEOS Agencies encouraged to support Carbon report co-author travel to the key meetings and to offer to host writing meetings. SIT Chair will issue a call for such support	To be Covered Thursday
25-10	CEOS Agencies to ensure expert representation at the Carbon Strategy Report review meeting in La Jolla on 29 <sup>th</sup> March 2012	To be Covered Thursday
25-11	Carbon Task Force Co-Chairs to contact CEOS Agencies to establish points of contact able to supply programmatic information and clarifications in support of the Carbon Strategy Report	To be Covered Thursday
25-12	Stakeholder agencies to explore management and operation arrangements for the GFOI Space Data	December 2011

	<b>Coordination Group</b>	
<b>25-13</b>	<b>GFOI Space Data Coordination Group to develop the GFOI Baseline Global Space Data Acquisition Strategy for 26<sup>th</sup> CEOS Plenary, including a year-by-year plan through to 2015</b>	<b>CEOS-26</b>
<b>25-14</b>	<b>CEOS Agencies to consider providing nominations for a Vice Chair for WGISS</b>	<b>COMPLETE</b> <b>Covered under item 5</b> <b>SIT-27</b>
<b>25-15</b>	<b>CEOS Chair to write to CEOS Agencies outlining the WGISS Work Plan and objectives for the coming years and inviting representation from CEOS Agencies not currently active</b>	<b>December 2011</b> <b>COMPLETE</b>
<b>25-16</b>	<b>CEOS Agencies encouraged to consider taking on responsibility for QA4EO secretariat and website maintenance</b>	<b>COMPLETE</b> <b>SIT-27</b>
<b>25-17</b>	<b>CEOS Chair to coordinate input of consolidated CEOS comments on the Climate Architecture Report</b>	<b>30 November 2011</b> <b>COMPLETE</b>
<b>25-18</b>	<b>WGClimate and SST-VC to undertake a pilot effort in 2012 to demonstrate the approach and benefits of the contribution of the CEOS Constellations to ECV coordination – and to report to CEOS-26 with a progress statement and recommendations</b>	<b>CEOS-26</b> <b>Ongoing</b>
<b>25-19</b>	<b>WGClimate to coordinate with the ESA MIM team to determine how best to integrate the ECV survey process into the full 2012 MIM update</b>	<b>May 2012</b> <b>Ongoing</b>
<b>25-20</b>	<b>WGClimate to report on their initial progress towards the CEOS ECV inventory and assessments</b>	<b>CEOS-26</b>
<b>25-21</b>	<b>SIT Chair, in coordination with CEOS SEC, appoint an ad-hoc Task Group on CEOS Participation, to report to SIT-27</b>	<b>Covered in Session 2</b> <b>Appoint Group: 15 December 2011</b> <b>Report: SIT-27</b>
<b>25-22</b>	<b>CEOS Chair, in coordination with CEOS SEC, to develop discussion and recommendations for CEOS Plenary, around the Membership issues raised by the CEOS Self Study</b>	<b>Covered in Session 2</b> <b>CEOS-26</b>
<b>25-23</b>	<b>CEOS Agencies to send written comments on the Self Study outcomes and the proposed way forward to SIT Chair</b>	<b>9 December 2011</b> <b>COMPLETE</b>
<b>25-24</b>	<b>CEOS Chair, in coordination with CEOS SEC, to lead</b>	<b>31 January 2012</b>



	<b>development of a CEOS Work Plan for 2012</b>	<b>COMPLETE</b>
<b>25-25</b>	<b>SIT Chair to lead development of the White Paper on CEOS “Essential Questions” suggested by the Self Study</b>	<b>Covered in Session 2-3 SIT-27</b>
<b>25-26</b>	<b>SIT Chair, in coordination with CEOS Chair and SEC, to initiate planning and development of the CEOS Guiding Documents (Strategic Guidance; Implementation Plan; 3-year Work Plan) suggested by the Self Study</b>	<b>Covered in Session 2-3 Teams established: CEOS-26 Documents complete: CEOS-27</b>
<b>25-27</b>	<b>CEOS Chair will convene a short CEOS Plenary session at SIT-27 in order to elect a Vice Chair for 2012-2013 for SIT</b>	<b>COMPLETE Covered under item 4 SIT-27</b>
<b>25-28</b>	<b>CEOS Chair and SIT Chair, in coordination with CEOS SEC, will steward the further definition of the emerging initiatives (GEO-GLAM, Polar Ecosystems, Water, Biodiversity, expanded Disasters activities) for their further consideration at SIT-27</b>	<b>Covered under items 3, 11 SIT-27</b>
<b>25-29</b>	<b>CEOS Agencies interested in participating in further side discussions on disaster-related matters, as raised by ESA at Plenary, to contact CEOS Chair</b>	<b>9 December 2011 COMPLETE</b>
<b>25-30</b>	<b>ESA to confer with CEOS SEC on the definition of the approach and contents for the EO Handbook 2012</b>	<b>December 2011 COMPLETE</b>
<b>25-31</b>	<b>CEOS Chair, in collaboration with CEOS SEC and INPE, to manage CEOS engagement and inputs for Rio+20</b>	<b>June 2012</b>
<b>25-32</b>	<b>ASI CEOS Chair team to conclude and issue the final version of the Lucca Statement</b>	<b>COMPLETE</b>

### 3 CEOS Priorities for 2012

Tim Stryker reported on the 2012 CEOS Work Plan, noting that the expected outcomes for CEOS in 2012 include:

- Improved coordination of Space Agency activities related to climate;
- Progress towards established CEOS-GEO priorities;
- Consideration of CEOS support to further key GEO priority initiatives;
- Continued and enhanced CEOS outreach to key stakeholders; and
- Further review and, as appropriate, adoption of recommendations from the 2011 CEOS Self-Study.

Tim noted that the Virtual Constellations and Working Groups are considering a reorientation to focus on physical deliverables. This reorientation was discussed at a workshop prior to SIT-27, and will also be covered later on the SIT-27 agenda.

Tim noted that CEOS will also tackle several established CEOS-GEO priorities in 2012, including:

- CEOS leadership within the Global Forest Observations task (including FCT, GFOI, and SDCG);
- Continued development of the CEOS Strategy for Carbon Observations from Space;
- Advancement of CEOS Data Democracy activities within the reorganized WGCapD;
- Further alignment of the CEOS VC objectives/activities to GEO 2012-2015 Work Plan Tasks;
- GEOSS Common Infrastructure (GCI);
- Integration approach to disaster risk management including mitigation;
- Continued support to the Joint Experiments on Crop Assessment and Monitoring (JECAM); and
- QA4EO – working to ensure that data is fit for purpose.

Tim noted that exploratory dialogue on support to GEOGLAM, integrated water cycle products and services, and the GEO BON network is also ongoing, and will be discussed during the course of the SIT meeting. He also noted that the Work Plan recognises the importance of ongoing activities such as the CEOS Missions, Instruments and Measurements (MIM) database, the publication of the CEOS Newsletter, and the update of the Earth Observation Handbook for Rio+20.

Mark Dowell noted the ongoing efforts by Mitch Goldberg as the Climate SBA Coordinator in coordinating the CEOS response to the updated GCOS IP and Satellite Supplement.

#### 4 CEOS SIT Vice Chair Election

Mike Freilich handed the chair of the meeting over to the 2012 CEOS Chair, Kiran Kumar (ISRO), for a special CEOS Plenary session.

Kiran noted the discussion at the Lucca Plenary surrounding the election of the CEOS SIT Vice Chair. He noted that CNES has formally nominated Pascale Ultré-Guérard for the position, and opened the floor for further nominations. There being no further nominations, Kiran announced that CNES, with Pascale Ultré-Guérard as CEOS Principal, was elected SIT Vice Chair with immediate effect.

Mike thanked Pascale and CNES for taking up this position, noting that it will be very helpful to the NASA SIT Chair team to have the support of CNES. Pascale thanked Mike, and noted that CNES looks forward to doing all they can to support CEOS and the SIT.

SIT 27-3	<b>CEOS Chair will confer with CNES to arrange a letter confirming appointment of Pascal Ultré-Guérard as SIT Vice Chair and outlining the expectations for the role.</b>	<b>April 2012</b>
----------	---	-------------------

Kiran also thanked those who raised the issue of CEOS agency representation in leadership positions at Lucca, noting that this has helped to clarify that all CEOS leadership positions are open to all CEOS Agencies. This is also a useful input to the CEOS governance discussions, which will occur over the next year starting at SIT-27.

#### 5 WGISS Vice Chair Status

Kiran Kumar, chairing the special Plenary session, reported that as of the start of SIT-27, no nominations had been received for the WGISS Vice Chair role. However, during the course of the meeting, CNES proposed Richard Moreno, noting his credentials and past involvement in WGISS. The nomination by CNES was welcomed by all participants. Richard will assume the role of WGISS Vice Chair effective immediately, stepping into the WGISS Chair role as of CEOS Plenary in late 2013 for a two-year period.

SIT 27-4	<b>CEOS Agencies encouraged to nominate candidates to serve as WGISS Vice-Chair.</b>	<b>COMPLETE</b> <b>Richard Moreno from CNES</b>
----------	--	--



	<b>nominated</b>
--	------------------

Kiran, Mike Freilich, and Satoko Miura (WGISS Chair, JAXA) thanked CNES for volunteering to support WGISS.

## 6 Selection of CEO and DCEO for Coming Terms

Kiran Kumar, chairing the special Plenary session, noted that the terms of the current CEO and DCEO (Tim Stryker and Kerry Sawyer) end this year, December 2012. Ideally a new CEO and DCEO will be selected by July in order to allow sufficient time for the transition. Separate nominations for the following roles will be open from the close of SIT-27 through May 2012.

- Nomination(s) for CEO for the term ending in 2014; and
- Nomination(s) for DCEO for the term ending in 2014.

<b>SIT 27-5</b>	<b>CEOS Chair will issue a call for nominations for CEOS agency candidates to serve as CEO and DCEO from late 2012 (nominations due by end May with a view to a decision in July 2012).</b>	<b>April 2012</b>
-----------------	---	-------------------

Tim Stryker noted that he and Kerry Sawyer are available to answer any questions from interested parties, and Ivan Petiteville (past CEO) will also be able to provide background information.

## 7 Report from GEO

José Achache reported that Barbara Ryan, currently Director of the World Meteorological Organization (WMO) Space Programme, will succeed him in the role of Director of the GEO Secretariat. José noted that over the past seven years, he has seen CEOS undergo significant changes, including the successful alignment of CEOS activities in support of the GEO Work Plan. He noted that GEOSS has three pillars: coordinated data access; open data policy; and political visibility. Political visibility was the original pillar, but data access and policy have grown in importance, and CEOS has played a key role in both.

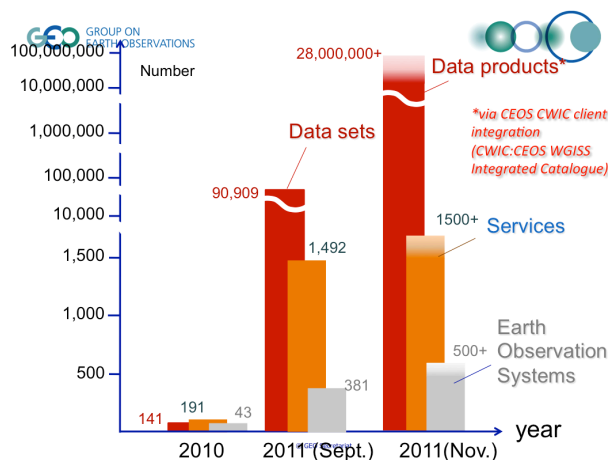
CEOS, and a number of its member agencies, have also played a very significant role in GEO's forest related initiatives – the Forest Carbon Tracking (FCT) task, and the Global Forest Observations Initiative (GFOI). José noted that the recent FCT Science and Data Summit (SDS-3), as well as the development of the GFOI Implementation Plan (update expected at GEO-IX) have significant CEOS agency involvement.

José reported that GEO's Global Agriculture Monitoring initiative (GEOGLAM) is emerging as a key initiative for the future. There is great potential for CEOS to contribute, given that the main outcome for GEOGLAM is access to satellite data for agriculture, requiring at least 2-3 coverages per growing season. The frequency and resolution of coverage required represents a significant challenge for CEOS and its agencies.

José also noted that the global land cover (30m), and GEO Hazard Supersites initiatives are also emerging as significant GEO priorities, which will require coordinated satellite observations.

José remarked that some CEOS activities are not being coordinated well enough. More specifically, he said the problem lies not with coordination of satellites but with coordination of data. Observations need to be integrated and this is a challenge for CEOS Agencies and the space community. The imperative now is to work differently. Along these lines, he said that in his opinion, not having free and open access to satellite observations could unravel much of what has been accomplished in management of the planet and support for the emergence of a green planet.

GEOSS was developed to provide information to decision makers. There has been some progress towards informing better decision making through access to Earth Observations from space, reflecting the increasing role that satellites play in providing data sets, products and services.



José reviewed several other priorities that CEOS may be asked to consider supporting:

- AfriGEOSS: GEOSS in and for Africa (discussed at last week’s GEO Executive Committee meeting). He mentioned that activities such as TIGER should contribute to AfriGEOSS;
- Water Cycle management – significant contributions possible from altimeters (river levels); radiometers (soil moisture); precipitation; ground water (GRACE); and
- Conserving and expanding free and open access to data in the face of fiscal challenges.

The final resolutions of recent G-8 meetings have mentioned GEO and the importance of building GEOSS, and the 2011 G-20 declaration mentioned the importance of the GEOGLAM initiative. However, in the lead-up to Rio+20, it is clear that there is still more work to be done to ensure that GEO remains prominent. José flagged a potential branding issue for GEO – the United Nations Environment Programme (UNEP) plans to raise the profile of their Global Environment Outlook – also known as “GEO”. This could present a problem for GEO if the profile of “the other GEO” increases after Rio+20.

José thanked CEOS for its support to GEO and GEOSS, noting that CEOS has enabled GEO to deliver on a number of key outcomes.

Mike Freilich noted that issues like infrastructure in Africa are mostly beyond the scope of CEOS space agencies. José noted that the key message for the space agencies is to demonstrate that space will be there to help an emerging Africa – that if they make use of space, they can move forward faster. Mike noted that this relates to one of the fundamental issues for CEOS – is CEOS going to spend resources on implementation, or on completing demonstrations to be operationalized by other organisations, and focusing its resources on developing the next demonstration? José stressed that the role of CEOS (and GEO) is to coordinate activities, noting that AfriGEOSS will pursue this goal, and that, in his view, a number of current CEOS agency activities in Africa are not well coordinated.

With this CEOS meeting being the last for José as GEO Secretariat Director, Mike presented José with a framed image as a sign of appreciation for his many contributions to the GEO and CEOS communities. A number of CEOS Principals thanked José for his contributions over the last seven years.

SIT 27-6

**CEOS Chair will write to José Achache expressing appreciation of CEOS and its agencies for his dedicated service in support of GEO and CEOS objectives.**

April 2012

## 8 CEOS Goals for GEO Post-2015

Tim Stryker provided a summary of the inaugural meeting of the GEO Post-2015 Working Group (WG). CEOS was welcomed in taking a role in this WG. Tim and Brent Smith represented CEOS when the WG met March 21-22 in Geneva. Officials from various CEOS Agencies had participated in this first WG meeting as part of their national GEO Member representation (CONAE, CSA, INPE, NSC, ASI, WMO) as did EUMETSAT in its role as a GEO Participating Organisation. The GEO WG has been tasked to assess options and scenarios for the next phase of GEOSS implementation, including the scope of activities, institutional arrangements, internal governance, and resourcing of GEO. It will report to the GEO Executive Committee, and at GEO-IX. It will make its final report to the GEO-X Plenary and Ministerial Summit in 2013, with detailed recommendations for the post-2015 future of GEO and GEOSS (“GEOSS 2.0”).

The WG had been provided a January 24, 2012-issued GEO Executive Committee-authored Discussion Paper on the Post-2015 Future of GEO that took into account earlier inputs to the Ex Com provided by Brazil, Canada, Germany and Japan. This paper laid out four possible post-2015 scenarios ranging from business as usual to comprehensive change. The WG, at its inaugural meeting, took note of this Ex Com paper but discussed the likely need to develop a revised set of scenarios, reflecting anticipated WG discussion on future alternatives.

Tim summarised a few of the key discussion points from the first WG meeting:

- The founding vision and scope of GEO were not seriously contested;
- At issue, with contesting views, is whether GEO should aim to be operational, with concerns stated that it should not claim to organize everyone else;
- It will be important to determine to what degree GEO should be responsible for (a) observations (definitely), (b) information provision (possibly), and (c) service provision (very unlikely);
- There have been some notable successes in data sharing and this should remain a high priority;
- The space community (CEOS and individual agencies) is a well-organized and significant contributor to the GEOSS; and
- The voluntary nature of GEO was strongly supported, with the understanding, however, that the GEO Secretariat needs to be stabilized and strengthened.

Some SIT members who had participated in the initial post-2015 WG meeting expressed concerns about the quality of inputs and discussion at the meeting, and it was agreed that CEOS should work to contribute to the process by focusing its efforts on making high quality, well coordinated contributions to future meetings and the ongoing process. José Achache suggested this process is an opportunity for CEOS to reconsider its relationship with GEO, and there may be benefits to further integration with GEO. He suggested further that CEOS needs to be proactive in this forum to ensure that its views are reflected, and its current and planned activities considered.

Brent Smith noted that the important role of CEOS and space agencies is accepted within the WG and GEO as a whole, however it is evident that space has been a bit too prominent in GEO, while in some cases the *in situ* community is not yet adequately represented. He noted that the transition of IGOS to Communities of Practice was not fully coordinated. He suggested it is important for CEOS to particularly work to connect with the *in situ* community within GEO/GEOSS.

Stephen Briggs noted that GEO needs to become operational in some sense (aiding the provision of operational services) or else it’s not clear what its role will be. GEO needs to provide a pathway for its associated activities to be sustained into the future. He cited the example of GFOI, which may start in Geneva, but may migrate to another agency like FAO. Mike Freilich noted that in this context, operational seems to refer to the sustained provision of data products by GEO itself – which is not envisioned.

Stefano Bruzzi stressed that it is important for GEO to ensure its plans are internally consistent in terms of resources, and the roles and responsibilities that are given. CEOS has to be clear about its role and resources, and manage expectations accordingly – CEOS must be careful not to overextend itself in offering to help. He also noted that the coordination of space agency activities in Africa could be a real role for GEO – in many cases space agencies are working with their national foreign aid bodies in these activities, and can't be seen to lead. He also noted that there is a level of competition amongst space agencies, which can complicate bilateral engagement.

Several other key points were raised during SIT's discussion of the topic:

- The discussion at the first meeting of the WG lacked structure;
- The issue of how GEO supports the provision of data in a useful form needs to be included in the discussions of the WG;
- It is important that in addition to CEOS submissions to the WG, that individual CEOS Agencies also speak up and represent their view points – in coordination with CEOS to the extent possible;
- The next WG meeting will be held in early September, with telecons planned for 25<sup>th</sup> May, and July;
- Barbara Ryan noted she understood that comments would be due from WG participants by 11<sup>th</sup> May, and CEOS should provide substantive inputs in order to try and influence the process at the outset;
- CEOS submissions should be consistent with the deliverables focus, ideally in the areas of forests, carbon, agriculture, and water. There is a clear need for GEO to demonstrate high profile outcomes;

It was agreed that CEOS should establish a GEO Post-2015 strategy committee to develop and promote CEOS positions and inputs to the GEO Post-2015 WG. Membership was agreed to be Brent Smith (Chair), Tim Stryker, Stefano Bruzzi, Pascale Ultré-Guérard, Stephen Briggs, Takao Akutsu, and Osamu Ochiai.

<b>SIT 27-7</b>	<b>CEOS to establish a GEO Post-2015 strategy committee (Chair – Brent Smith) to develop and promote substantive CEOS positions and inputs in connection with future deliberations of the GEO Post-2015 Working Group (Note the GEO WG is already involved in ongoing deliberations so CEOS inputs are required in the May time frame, well before September).</b>	<b>May 2012</b>
-----------------	--	-----------------

## 9 SST Virtual Constellation Implementation Plan

Mike Freilich asked SIT to confirm endorsement of the SST VC Implementation Plan (IP). No objections were raised, and the plan was endorsed. Several discussion points were raised:

- Stephen Ward noted that the SST co-leads have followed the Constellations Process Paper, and previously asked for CEOS SEC feedback which they took and improved the plan – it appears to be a sound basis to move forward;
- Ivan Petiteville noted that the SST VC is leveraging GHRSSST which was established 12 years ago; he also noted that the proposal contained the list of the areas of GEO where the SST VC can contribute;
- Mark Dowell noted that the VCs themselves are also contributing to GEO outside of the coordinated CEOS contributions; and
- It was noted that CEOS Agencies should consider the offer to nominate representatives to the SST VC Team.

<b>SIT 27-8</b>	<b>SIT Chair to write to the SST-VC team to confirm approval of their</b>	<b>April 2012</b>
-----------------	---	-------------------

	<b>Implementation Plan and to urge their progress towards the first milestones as scheduled in the IP.</b>	
<b>SIT 27-9</b>	<b>SIT Chair to circulate a call for CEOS Agencies to nominate representatives to the SST VC Team – in support of SST-VC IP objectives.</b>	<b>April 2012</b>

## 10 Update from the Carbon Task Force

On behalf of Takashi Moriyama and herself as co-chairs, Diane Wickland presented a summary of CTF activities since CEOS Plenary in Lucca. Diane noted that the current chapter drafts of the *CEOS Carbon Strategy* were circulated prior to SIT-27, and that the CTF is looking for feedback from CEOS Members. A workshop focused on the *CEOS Carbon Strategy* is scheduled for the day after SIT-27 in order to initiate that consultative process. All CEOS Agencies were encouraged to attend and/or provide inputs to the CTF by email.

She noted that the CTF was still lacking resources to support dedicated meetings to move the initiative forward, and is considering the best way to address this issue. Travel support from CEOS Agencies would be welcomed.

<b>SIT 27-10</b>	<b>CEOS Members to provide feedback to the CEOS Carbon Task Force on the chapter drafts of the CEOS Carbon Strategy circulated ahead of SIT-27.</b>	<b>April 2012</b>
------------------	---	-------------------

## 11 CEOS Support to GEO Global Agriculture Monitoring

Yves Crevier summarised GEO's Global Agriculture Monitoring initiative – GEOGLAM. GEOGLAM aims to improve operational global and national crop production estimates using Earth observation data disseminated on a timely basis.

Mike Freilich noted that the situation with GEOGLAM is evolving rapidly, and CEOS should be proactive in considering its involvement. A number of discussion points were raised:

- Per-Erik Skrovseth noted that based on experience with forests, it is vital that the objectives of GEOGLAM and its expectations for CEOS are clearly understood. He recommended that GEOGLAM communicate to CEOS what type of data is needed in order for CEOS to respond with what can be provided and who might benefit. Per-Erik urged CEOS be concrete and specific on what is feasible and what is possible before committing itself to support GEOGLAM and other initiatives; he also recommended that GEO's estimated budget be removed from the Work Plan;
- Tim Stryker noted CEOS should look at GEOGLAM as a phased and achievable activity; it has the support of major stakeholders (the G20, FAO, WMO, and others) for whom food supply vitality is a priority;
- Osamu Ochiai noted that JAXA has been involved in a GEOGLAM-type activity focused on rice in Asia, carried out in cooperation with Thailand, other Asian countries, and the Japanese government;
- Adrian Simmons stressed the importance of awareness of related activities such as WMO's Global Framework for Climate Services, though it was noted that whether this Framework will overlap with GEOGLAM is still to be determined;
- Julio Dalge noted that there is a need to take into account the differences between production in developing and developed countries, and also noted that the challenges of coordinating observations for agriculture are likely even greater than for forests; and

- It was noted that CEOS and space agencies are already prominent in the GEOGLAM task leadership, and the real need is for CEOS to invest some capacity to help GEOGLAM formulate its space data requirements.

Yves presented a series of proposed CEOS decisions and actions coordinated with Stephen Ward, Tim Stryker and John Faundeen on the margins of the SIT meeting:

1. CEOS agrees to participate in GEOGLAM's initial space-related program development (SIT-27).
2. CEOS offers to GEOGLAM to take on responsibility to further develop the space-based observations component suggested by the draft Work Plan, including development of more specific plans and schedules for the evolution of the observations activities, including data acquisitions, compilation, access and processing. An ad-hoc team will take on this responsibility and will include Yves Crevier, John Faundeen, Brian Killough, Prasad Thenkabail, Stephen Ward and others who may be interested. (SIT-27)
3. CEOS should urge GEOGLAM (and work with GEOGLAM) to arrange a user requirements meeting with the objective of defining detailed information requirements – from which CEOS may infer observational needs. CEOS will designate appropriate representatives to participate in this meeting (June/July 2012).
4. A major component of the CEOS role will be the space data coordination activity to address the significant and sustained coverage needs anticipated of GEOGLAM. The GFOI SDCG is relatively new and developing its capacity and identity. ESA took the action to explore with SDCG the possibility of tasking/augmenting the SDCG group to undertake a preliminary global acquisition strategy in support of GEOGLAM needs. The acquisition strategy would follow and benefit from the process developed for GFOI and would identify the agencies, missions and sensors that can contribute to the observational requirements of GEOGLAM (From CEOS Plenary).
5. Building upon the outcomes of the user requirements and space data coordination activities, responsible CEOS team will provide their analysis and recommendations to CEOS leadership on further steps vis-à-vis the GEOGLAM initiative – including a plan for the pre-2015 outcomes (at CEOS SIT-28, Mar 2013).

Yves noted that the SDCG is planning to support a large part of the supply chain for GFOI needs - from developing the acquisition strategy to facilitating data delivery, but at this stage, the group is not requesting permission to implement whatever GEOGLAM strategy might be developed.

<b>SIT 27-11</b>	<b>An <i>Ad Hoc</i> CEOS team to take responsibility for working with GEOGLAM to further develop the space-based observations component suggested by the draft Work Plan. Initial membership should include Yves Crevier, John Faundeen, Brian Killough, Prasad Thenkabail, and Stephen Ward.</b>	<b>CEOS Plenary</b>
<b>SIT 27-12</b>	<b>ESA will explore with SDCG the possibility of tasking/augmenting the SDCG group to undertake a preliminary global acquisition strategy in support of GEOGLAM needs. SDCG tasking would begin following approval at Plenary.</b>	<b>CEOS Plenary</b>
<b>SIT 27-13</b>	<b>Building upon the outcomes of the user requirements and space data coordination activities, responsible CEOS team will provide their analysis and recommendations to CEOS leadership on further steps vis-à-vis the GEOGLAM initiative – including a plan for the pre-2015 outcomes.</b>	<b>SIT-28</b>



## 12 Rio+20 Inputs from CEOS

Kiran Kumar summarised the plans for CEOS outreach at Rio+20. These include a CEOS booth and outreach materials, as well as CEOS presence at several events - including a GEOSS side event sponsored by Japanese Government, a European Commission event on GEOSS, and a UNOOSA event on space and sustainable development. Japanese GEO has reserved 18 square meters (6 m x 3 m) for a combined GEO and CEOS exhibit, and the points of contact for the combined booth are: Toshio Koike, Osamu Ochiai, Michael Williams, and Brian Killough.

Outreach materials will include the CEOS EO Handbook print edition for Rio+20 (ESA), a proposed one-page CEOS Handout on CEOS Contributions to Sustainable Development (SEO, CEO/DCEO), CEOS Exhibit Visuals (SEO), CEOS Newsletter (JAXA), and CEOS Souvenirs (SEO). ESA should be included in any CEOS Rio+20 coordination activities.

José Achache reminded everyone that at Rio+20 the focus will be UNEP, not GEO. He stressed that CEOS and GEO need to speak with one very focused voice; more than one message will not be effective. The GEO Executive Committee has a mandate to develop this key message for Rio+20, and GEO welcomes CEOS input within the next two to three weeks.

<b>SIT 27-14</b>	<b>The CEOS Rio+20 coordination group, led by CEOS Chair, to provide inputs on the planned key CEOS message at Rio+20 and ensure good coordination with GEO's Rio+20 organizers.</b>	<b>10<sup>th</sup> April 2012</b>
------------------	--	-----------------------------------

Brent Smith noted that Dr. Yasushi Horikawa (incoming chair of COPUOS, ex-JAXA) has requested CEOS-GEO participation in UNOOSA events at Rio+20.

Márcia Alvarenga warned that hotels in Rio are almost fully booked for the event, and the nearest available rooms may be up to three hours away.

<b>SIT 27-15</b>	<b>The CEOS Rio+20 coordination group, led by CEOS Chair, to coordinate with GEO on the CEOS/GEO booth layout and contents, confirm staffing availability, and arrange speakers as appropriate.</b>	<b>June 2012</b>
<b>SIT 27-16</b>	<b>SEO to work with JAXA on creating the necessary poster materials for the CEOS/GEO booth at Rio+20.</b>	<b>June 2012</b>

## 13 CEOS Self-Study: A First Look at Membership and Participation

Brent Smith, on behalf of Patricia Jacobberger-Jellison, presented an overview of the CEOS Self-Study (CSS) recommendations around *membership and participation*. Participants in the team organized by the SIT Chair to work this particular CSS-associated topic included Patricia Jacobberger-Jellison, Tim Stryker, Brent Smith, Mark Dowell and Vivek Singh. The objectives of this effort are:

- To better understand why some CEOS Members and Associates, including important CEOS partner organizations that participated in the past, are not currently participating in the EO work of CEOS or its meetings; and
- To propose concrete steps to encourage, empower and support full engagement in CEOS activities by the broadest possible spectrum of CEOS Agencies.

Brent summarised the study approach, which followed several key lines of investigation:

1. Extract relevant findings from the 2011 CSS Report (including Study Team Reports) (complete).
2. Obtain and synthesize input from M&P Team Members (complete).

3. Coordinate M&P Study with CEO/DCEO/SEO efforts to update the CEOS contact database (ongoing).
4. Assess CEOS membership list to understand distribution of active and inactive agencies (including Associates), and prioritize for subsequent interviews (complete).
5. Review past CEOS meetings minutes, attendance lists, and notes as an independent measure of broad agency participation (ongoing).
6. Develop questions and background material for conducting interviews (complete).
7. Re-establish contact with inactive agencies and conduct interviews (make new contacts where necessary) (ongoing).
8. Interview a selection of active agencies to better understand their reasons for being active in CEOS (ongoing).
9. Synthesize results and develop recommendations for consideration by CEOS leadership, including follow-up by CEOS leadership, and invitation to next Plenary (preliminary report here; final report to come).

Mike Freilich noted that the SIT Chair is ready to support step 7, by preparing joint letters from CEOS and CEOS SIT Chairs to disengaged organisations - asking for an update on the status of their participation in CEOS.

The Membership and Participation team will be conducting interviews in April and May, compiling results in June, and releasing a final report in July. The intention is to use the output of this discussion at SIT-27 to inform this process. The main points raised in the discussion were:

- One CEOS Associate applied and was accepted – but never developed an EO program;
- The engagement of some CEOS Agencies (in particular Associates) changed when IGOS was concluded and the IGOS Themes were converted into GEO Communities of Practice (CoP). After that transition, some of these CoPs have been functioning, but others have not. Many IGOS Partners are no longer participating in CEOS Plenaries which had previously been held back-to-back with annual IGOS Partnership meetings;
- Barbara Ryan noted that since IGOS was concluded, and rolled into GEO CoPs, a number of the UN organisations may have started to focus their coordination on GEO – these organisations are more likely to be at the GEO Plenary;
- Stephen Briggs noted that FAO interacts with CEOS through GFOI, and so participation in CEOS Plenary is a duplication of efforts for them;
- Per-Erik noted that some agencies don't see value added in attending CEOS meetings because they have a manpower/human capital problem;
- Some points of contact (POC) are lost due to changes in personnel and to retirement, and so there is a need to establish secondary POCs and maintain a broad contact base;
- Sometimes involvement ends because certain activities are completed or retired;
- “Activity with invisibility” - strong anecdotal evidence suggests that some CEOS Members and Associates are active at the working level, but not at Plenary/SIT and so are overlooked as a whole;
- In general, it doesn't seem that the governance structure is having a negative impact on participation; and
- Brent noted that the formation of the new WGCapD is a good example of what CEOS can do in tackling a challenging lack of participation in the former WGEdu. Following a focus at the 2010 Plenary on a Data Democracy thrust, the 2011 CEOS Chair organized a study team with the result that CEOS capacity building was refocused and 12 CEOS Agencies participated in the first meeting of the new WGCapD in February 2012.

Mike noted that the first part of the Self-Study has served to clarify what participation in CEOS means, which has been an excellent outcome. Counting up attendance at Plenary and SIT is not necessarily an accurate proxy for contributions to CEOS. Mike asked the Virtual Constellation (VC) and Working

Group (WG) leads around the table to provide a brief summary of their current participation and level of engagement of CEOS Members and Associates.

<b>WGCV – Greg Stensaas</b>	<b>WGISS - Satoko Miura</b>
<ul style="list-style-type: none"> <li>– Fairly strong list of participants;</li> <li>– Two new members from ASI</li> <li>– China starting to engage in the sub-groups – working to get the right participation from CAST and CRESDA; and</li> <li>– Russian participation increasing.</li> </ul>	<ul style="list-style-type: none"> <li>– Require an HMA participant from ESA; and</li> <li>– No representation from ISRO, DLR, CONAE, CSIRO, or EUMETSAT.</li> </ul>
<b>WGCapD - Jacob Sutherlun</b>	<b>WGClimate – Mark Dowell</b>
<ul style="list-style-type: none"> <li>– Re-establishing;</li> <li>– Have had conversations with CNES, CSA, EUMETSAT, NASA about the continued active support of the WGCapD; and</li> <li>– Asia engagement is progressing with ISRO and CMA participating in the Brazil meeting and offline dialogue with JAXA.</li> </ul>	<ul style="list-style-type: none"> <li>– Satisfied with the agency representatives, but new agencies welcome to join; and</li> <li>– Agencies shouldn't feel that just because they don't have a climate-quality sensor capability, that there aren't very important roles for them in the group.</li> </ul>
<b>LSI – John Faundeen</b>	<b>ACC - Richard Eckman</b>
<ul style="list-style-type: none"> <li>– Participation has been patchy – mostly USGS and INPE; and</li> <li>– This week's LSI workshop will be well attended – will have a better feel after that.</li> </ul>	<ul style="list-style-type: none"> <li>– In decent shape in terms of agency participation;</li> <li>– Main concerns are lack of Russian and Chinese participation; and</li> <li>– Working the issue on increased Chinese participation and hope for a solution in the not too distant future.</li> </ul>
<b>OST - Eric Lindstrom</b>	<b>PC - Steven Neeck</b>
<ul style="list-style-type: none"> <li>– New to this VC as a lead;</li> <li>– No official membership, only participation;</li> <li>– Those that are active contribute – and if there's a hole then we try and fill it; and</li> <li>– Rolling set of participants but relatively complete.</li> </ul>	<ul style="list-style-type: none"> <li>– Good participation;</li> <li>– Exceptions are CMA and ROSHYDROMET; and</li> <li>– For ROSHYDROMET, still only have the head of agency as a contact.</li> </ul>
<b>OSVW - Paul Chang</b>	<b>OCR – Mark Dowell</b>
<ul style="list-style-type: none"> <li>– Good participation; and</li> <li>– Lack of Russian and Chinese involvement is the only issue.</li> </ul>	<ul style="list-style-type: none"> <li>– Meetings organised in parallel with IOCCG; and</li> <li>– All recent meetings have been well attended by OCR VC members.</li> </ul>
<b>SST – Ivan Petiteville</b>	
<ul style="list-style-type: none"> <li>– Call for CEOS participation in the GHRSSST science group has gone unanswered; and</li> <li>– Participation needed from ISRO, KARI, SOA and CMA, CONAE, and ROSKOSMOS.</li> </ul>	

Mike noted that it is not likely that travel restrictions will be lifted in the near future, and so we may need to modify expectations, or change approaches that the VCs and WGs use to accommodate participation without presence.

Both Mike and Brent noted that there appears to be a lot of restructuring going on within the Chinese agencies, which has been a challenge. Brent noted that Russia has been active, and has recently hosted a WGCV meeting. Collectively, more can be done to help these organisations feel welcome.

Mike suggested that the Troika try to tackle the issue of Chinese and Russian engagement. Kiran Kumar agreed, but noted that as CEOS Chair, ISRO has tried to reach out to the Chinese agencies without results. Brent noted that IAC and ISRSE are both in Beijing next year, and this may present opportunities for

CEOS leadership to reach out. Ivan Petiteville and Paul Chang noted that requests for engagement need to be specific. Barbara Ryan noted that ROSKOSMOS, ROSHYDROMET, and CMA are all heavily involved in CGMS, and that this might be a better forum in which to engage them. Steven Hosford noted that CNES has joint activities with SOA, and may be able to help engagement there.

Paul Counet indicated that such a top-down approach might not be the most appropriate in with a number of agencies for which satellite activities are only one part of their business. Taking the example of SOA, with whom EUMETSAT will sign a Cooperation Agreement later in 2012, a bottom-up approach based on limited projects might be the right way to address the benefits of wider international cooperation, which would then result in these agencies considering a participation in groupings like CEOS. Kiran noted that monthly updates on progress towards engagement can be given within the Secretariat.

<b>SIT 27-17</b>	<b>CEOS Troika, under the leadership of the CEOS Chair, to formulate an approach to Chinese and Russian agency engagement in CEOS. CEOS SEC will be kept apprised of progress.</b>	<b>CEOS Plenary</b>
<b>SIT 27-18</b>	<b>CNES to advise the Troika on the potential for CEOS engagement with SOA based on their ongoing bi-lateral joint activities.</b>	<b>April 2012</b>

## 14 CEOS Self-Study: Essential Questions

Mike Freilich noted that the CEOS Self-Study recommended the creation of a series of strategic guidance documents for CEOS:

- Strategic Guidance Document (10-12 year longevity);
- Implementation Plan (5-7 year longevity); and
- Work Plan (3-year longevity, updated annually).

However, coming out of the Self-Study there is a need to answer a series of questions that can pin down the essence of CEOS before we can write these documents. The answers to some Essential Questions (EQ) need to be analysed by SIT in order to scope the documents.

The goal for this session is to provoke discussion and to emerge from the session with a shared sense of what the full suite of Essential Questions is, but not necessarily to answer them. Finding those answers will be the subject of an ongoing conversation over the coming months, to be brought forward for discussion and conclusion at the September SIT Technical Workshop. The objective then for the SIT Technical Workshop will be to present a set of draft responses to these EQ, with the plan to present these answers for formal endorsement by the CEOS Principals at Plenary. Once endorsed by Plenary, the formulation of the CEOS strategic guidance documents can begin.

Mike reminded the group of CEOS' original goals, summarising their implications:

- To optimize benefits of space-borne Earth observations through cooperation of its Members in mission planning and in development of compatible data products, formats, services, applications and policies; *[basis of coordination from a mission standpoint]*
- To serve as a focal point for international coordination of space-related Earth observation activities; and *[basis of coordination from a mission standpoint]*
- To exchange policy and technical information to encourage complementarity and compatibility of observation and data exchange systems. *[essentially establishing standards, formats and communications among agencies]*

Mike noted the EQs identified thus far:

- EQ1. What constitutes “Success” for each type of CEOS activity? (And when does an activity end?)
- EQ2. What constitutes CEOS scope and strategy? (Should CEOS conduct sustained, long-term, routine data provision, versus demonstrating feasibility for spinoff to other organizations for long-term operations?)
- EQ3. What is the Value Proposition for CEOS? (What are the benefits that agencies and organizations gain through CEOS membership, and how do we maximize those benefits?)

He presented several other candidate EQs for discussion:

- What are the key things that CEOS absolutely must do well to achieve its goals?
- What are the most valuable outcomes that CEOS provides/enables for its user communities? [*slightly different from the value proposition question*]
- What conditions would pose the greatest risk to CEOS achieving its objectives now, or in the future?
- How sustainable are CEOS activities?
- What big accomplishments does CEOS want to look back on, ten years into the future? [*legacy*]

A discussion followed and the main points raised were:

- Mike clarified that with reference to EQ2 that CEOS cannot simultaneously support sustained data provision, and activities demonstrating feasibility to be spun-off; this is a fundamental decision;
- Stephen Briggs noted that some of the EQs presented should be applied on a project basis, and some on a CEOS level. For example, EQ1 could be applied on an activity level, but does have some implications for CEOS as a whole. Mike noted that success criteria for an activity should be indicated for all CEOS activities before they are initiated – and that this principle alone is worth enshrining in the CEOS strategy documents;
- Stephen Ward noted that if you applied EQ2 to GFOI, it may be that in some cases CEOS may need to coordinate on a long term basis. Mike agreed that in some cases, space agencies may have a sustained role, but the question is whether that long-term role requires active and sustained support from CEOS, or whether it can be handed over to an operator. Stephen Ward noted that in the case of GFOI, there is a need to coordinate observations and supply, even if agencies themselves conduct the data provision itself;
- Mark Dowell noted that none of the EQs address relations with external “peer” agencies, with which CEOS might undertake common activities (for example in the case of the Climate Architecture). Mike agreed, noting this could form the basis for a new EQ;
- Eric Lindstrom cited the example of WMO, noting that it doesn’t actually provide any data – he suggested that CEOS is the glue that holds the community together; not the stuff that is being held together;
- John Bates noted that process of transitioning expectations to the long-term provision of observations is a long process, carried out on decadal timeframes which requires enormous persistence – this may force CEOS in the direction of long-term provision under EQ2;
- Stefano Bruzzi noted that data provision does not appear in the original CEOS objectives, however all CEOS Agencies participate in some kind of sustained operations and data provision. CEOS itself can bring higher level coordination that cannot be achieved at an agency level. He added that if CEOS starts to provide data products, we are stepping into the domain of GEO;
- Mike noted that such a step towards GEO would be quite deliberate, and CEOS should have a set of internal principles that are consistent if GEO were to ‘go away’. He suggested that this could form the basis for another EQ;
- Steven Hosford suggested that one bounding endpoint of this discussion would be the development of a “CEOS Satellite”, and that the question of whether CEOS should pursue multi-lateral development



of satellite systems should be considered as one of the Essential Questions to be debated at the SIT technical meeting in September. There have been examples of the development of multilateral satellites in the past (i.e. SAC-D/Aquarius) but not in a CEOS context. Stefano noted that the best approximation of a “CEOS Satellite” would be the CEOS VCs. Per-Erik Skrovseth stressed that identifying the requirements one is trying to fulfil is the most important step in developing a satellite;

- Per-Erik noted that GFOI would continue without GEO – a transition of the GFOI activity from GEO as an incubator is possible in the future anyway. Mark agreed that engagement with a plurality of organisations is a sign of CEOS maturity;
- Makoto Kajii noted that the EQs will not have generalized answers because CEOS consists of member agencies with different motivations and purposes, and that these motivations also change from time to time. Agency budgets affect the projects and missions. He noted that agency participation in CEOS activities always requires alignment of agency objectives with the given activity. He also noted that CEOS objectives should be more focused, and concentrate on global issues on which CEOS can make a significant contribution – for example climate, carbon, water. He added that CEOS does not, for example, have guidelines to determine what initiatives it takes on for global benefit.
- Mike noted that CEOS exists to coordinate, but this raises a challenge because by definition there is no implementation money in the budgets of Agencies for coordination;
- It was agreed that while there is some value in reporting, CEOS is about coordination;
- Kiran Kumar noted that purpose, timeline, schedule, and planned completion for each activity needs to be more tightly defined. Once activities have been completed, they should be closed and CEOS should move on. These elements should be taken into account in the mechanism for accepting new activities; and
- Stephen Briggs noted that the mechanism that CEOS provides for collaboration is extremely valuable. He noted that the discussion at Plenary and SIT is important, but that there seems to be a disconnect between Plenary and the Working Groups (WGs). Much progress has been made on this front over the past 10 years, but there are still gains to be made – this is not the fault of the WGs. Rather, the Plenary and the SIT processes need to communicate better. Ivan Petiteville agreed, noting as a former WG Chair that you can communicate the CEOS priorities to the group, but it is sometimes difficult to direct the WG to address these priorities because of the lack of resources and because of the specific interests and competencies of different Agencies.

Mike noted that the EQs process is not the end point, but rather the start of a process to develop and refine the CEOS organisational and governance structures for presentation at the CEOS Plenary in November 2013. The EQs are intended to isolate the necessary issues which will then be addressed one-by-one to move the organization forward.

<b>SIT 27-19</b>	<b>CEOS SIT Chair to communicate the final set of “Essential Questions” to the CEOS community.</b>	<b>April 2012</b>
<b>SIT 27-20</b>	<b>CEOS SIT Chair, in consultation with the CEOS community, to prepare a set of draft responses for the “Essential Questions” for presentation at the SIT Technical Workshop, and eventually for presentation for endorsement at the CEOS Plenary in India.</b>	<b>CEOS SIT Technical Workshop September 2012</b>

## 15 CEOS Self-Study: Structure and Governance

Mike Freilich noted that a major finding of the CEOS Self-Study was the acknowledgement that CEOS’ structure has become more complex and confusing through time – this has created an *ad hoc* organisation with overlapping priorities and activities. This has meant that responsibility for the implementation of



priorities decided by SIT and Plenary is not always clear. The Self-Study recommended that the CEOS core functions need to be re-articulated, and CEOS should consider modifying its current structure to better suit the functions that are needed today. It also recommended clarifying what parts of the organisation have responsibility (as opposed to participation) for core functions as a fundamental step towards a stronger structure. Brent Smith noted that CEOS has evolved over the years, and has done what has been required in various eras.

Mike outlined four CEOS top-level activities for discussion:

1. Substantive space-borne coordination, scientific, and user-focused activities – actual standardised information products.
2. Top-level strategy development and guidance – priorities and new initiatives.
3. Internal CEOS coordination – amongst Members/Associates, CEOS management, and sub-organizations.
4. External CEOS coordination – between CEOS and outside organizations.

Several general discussion points regarding the nature of the top-level functions were raised:

- Richard Eckman asked if all Virtual Constellations (VCs) and Working Groups (WGs) should participate in top-level planning. Mike clarified that not all groups can be involved in top-level planning or else by definition, its not top-level;
- Stephen Briggs noted that of the four top-level activities presented, (1), (2), and (4) seem to be strategic, where (3) is more about implementation;

José Achache noted that from his perspective, CEOS is mostly active in (3) and (4), and questioned whether CEOS is doing anything in (1) and (2). To date, multi-party satellites have been bi-lateral, and CEOS Agencies don't align their future mission planning activities. He remarked it would be good for CEOS to focus energies and influence that would result in space board coordination for 5 to 10-year planning within Agencies.

- Brent Smith noted the coordinated efforts of NASA, CNES, NOAA, EUMETSAT to ensure continuity in the Jason series, and also that IGOS and to some extent GEO itself were outcomes of CEOS coordination;
- Stephen Briggs cited the example of GFOI, where the top-level coordinating body has a representative from CEOS. This has been valuable as this is a non-space led activity, with a clear requirement for coordination amongst space agencies – this is an example of what CEOS does well;
- Tim Stryker noted that no CEOS activities to date have driven mission planning explicitly, and CEOS should consider carefully if it wants to move in this direction;
- Kiran Kumar noted that even though CEOS does not have a past record of coordinated mission planning, if that is desirable, then we should capture it as an objective;
- Eric Lindstrom asked whether we should think about responsibility as being on everyone and not just a few. Mike added that responsibility must be mapped to a single point. If two people or parties are responsible, nobody is responsible - if everyone who participates is responsible then nobody is responsible; and
- Per-Erik Skrovseth noted the GFOI-FCT example, stressing that while CEOS and a number of its participating countries are involved, the process should still loop back to CEOS to help guide CEOS Agencies on the necessary measurements and missions – for example L-band SAR and space-borne Lidar.

For each of these top-level activities, Mike asked: (1) who is responsible?; and, (2) who participates? He noted that the objective is to end up with an organisation that maps well onto activities and responsibilities that we have – not to take the organisation that we have and map it into roles and responsibilities. The following table summarises the various discussion points raised.

1. Substantive space-borne coordination, scientific, and user-focused activities		2. Top-level strategy development and guidance	
Responsible	Participates	Responsible	Participates
SIT Chair	WGs, VCs, special teams like CTF, SDCG, and others	CEOS Chair	Troika, SEC, Plenary, SIT Chair, WGs and VCs (to distil messages up to CEOS leadership)
3. Internal CEOS coordination		4. External CEOS coordination	
Responsible	Participates	Responsible	Participates
CEOS Chair	SEC (with support from CEO/DCEO), Plenary, SIT Chair	CEOS Chair	SEC (with support from CEO/DCEO), Plenary, SIT Chair, VCs and WGs

In addition, a number of related discussion points were raised:

*1. Substantive space-borne coordination, scientific, and user-focused activities*

- John Faundeen noted that in the SDCG and LSI, he would much rather receive guidance from the higher order body like SIT, and then participation would be at the level of SDCG, VCs, WGs, etc;
- Stephen Briggs asked if SIT is happy for the WGs to take on activities without higher level direction. Mike noted he couldn't see CEOS leadership forbidding WGs taking on activities of their choosing. However, the WGs and VCs should not take on activities which preclude them from addressing their core responsibilities because that may task their limited resources negatively; and
- Tim noted that the WGs and VCs are increasingly being asked by external organisations to engage in activities that are not directly meeting the objectives of CEOS.

*2. Top-level strategy development and guidance*

- Mark Dowell noted the need to recognise that coordination actually happens at various levels – for example external CEOS coordination is still important at the working level;
- Julio Dalge noted that there is some confusion about the two-year mandate for the SIT Chair, relative to the one-year mandate of the CEOS Chair, and with respect to their relative roles. Mike noted that we should focus on harnessing the contributions and talents of everybody involved;
- Stephen Briggs added that notionally the Plenary and the CEOS Chair are on the same level – the Chair is the embodiment of Plenary for their term, and Plenary is the ultimate authority within CEOS. All other entities are in place to serve Plenary. Kiran agreed, noting that implementation responsibility is often delegated by the Chair; and
- Stephen Briggs noted that strategic decisions don't need to be taken that frequently, and so probably the once-a-year Plenary can cover the requirement.

*3. Internal CEOS coordination*

- Stefano Bruzzi noted that CEOS internal coordination should not fall to the CEO/DCEO. Stephen Briggs agreed, noting that responsibility for internal coordination lies with the CEOS Chair, supported by Plenary, the SIT Chair, and others. Tim Stryker said that the CEOS Executive Officer (CEO) is not the “Chief Executive Officer” – s/he plays an advisory and implementation role on behalf of the CEOS Chair;
- Julio reminded the suggestion made by Gilberto Camara, during the CSS interviews, of having a permanent secretariat, with full-time members, to support the CEO and SEO; and

- One model suggested was SEC, chaired by CEOS Chair who is responsible for providing secretariat services (i.e. minutes and actions), and supported by the CEO who provides advice and supports implementation of appropriate actions as agreed to by the SEC.

#### 4. External CEOS coordination

- Stephen Briggs noted that it depends very much on what kind of external interaction one is talking about. The only person who can act with the authority of Plenary is the CEOS Chair. If for example, WMO writes to the CEO on an issue, the CEO should raise this with SEC, and the CEOS Chair can decide what action to take. The CEOS Chair can delegate the authority for external interaction as it sees fit to one or more of the various elements of CEOS. Informal contacts are also possible and inevitable, but this is the formal arrangement; and
- Mark Dowell raised the issue of whether the external interface is any different with organisations that are “peers” vs. “customers”. Mike noted that he had been thinking more about customers, but the issue of the interface with CEOS peer organisations also needs to be addressed.

Mike noted that the end goal is to come to agreement on who participates in, and who is responsible for, CEOS top-level core functions. The governance discussion will continue over the coming months, and into the SIT Technical Workshop and Plenary. CEOS can work to fully incorporate governance and structure into the guiding documents that will be developed over the next year and a half. The end goal is an organisation that maps well to the 4-5 core functions that we identify.

## 16 CEOS Virtual Constellations and Working Groups

### Summary and Rationale

Mike Freilich introduced Stephen Ward of the NASA SIT Chair Team as leading the session and having coordinated the preparation and inputs of the many Virtual Constellation (VC) Leads and Working Group (WG) Chairs.

Stephen Ward recalled that the VCs and WGs are the main mechanisms available to CEOS as an organisation in support of delivery of its objectives. The CEOS Self-Study (CSS) raised many issues in relation to the management and operation of the VCs and WGs and their interaction with SIT. In particular, the expectation was raised that the VCs and WGs could be aligned in support of the increasing emphasis within CEOS on physical outputs. The SIT-27 session, and the workshop that preceded SIT (for VC Leads and WG Chairs) aim to progress the dialogue around the CSS recommendations and explore the implications for each VC and WG. Stephen Ward summarised the different objectives for the VC and WG session:

- To develop the CSS recommendations in relation to VCs and WGs, and explore opportunities and obstacles to the recommendations, specifically looking at the ‘sharp end’ of implementation;
- To allow CEOS Principals to hear VCs and WGs perspectives and needs;
- To take first steps towards identifying top-down priorities for VCs and WGs that match the working realities and possibilities of these groups and their participants. It is understood that the VCs and WGs will be important contributors towards CEOS outcomes in the next two years that can support agreement on a post-2015 future for GEO. These are likely to be in relation to big headlines like carbon, forests, food, water, and disasters.

Stephen Ward suggested that a shifting of the traditional scope of CEOS activities may be necessary to support several big wins for the GEOSS in the closing years of its 10-year plan, with greater emphasis on data delivery.

### Brief Check of VC and WG Actions

Open action items were briefly reviewed, as follows:

**SIT 26-15:** CEOS Agencies invited to nominate representatives to the SST VC Team. *No nominations were made*

**SIT 26-17:** CEOS Agencies encouraged to provide nominations to WGCV Chair for the WGCV Vice-Chair, with the role commencing at WGCV-34 (February 2012, Australia), and transition to WGCV Chair at WGCV-35 (September 2012, TBD).

**SIT 26-18:** WGCV Chair to prepare a detailed proposal to augment QA4EO capacity and requesting CEOS agency resources. *COMPLETE – UKSA is providing QA4EO secretariat support.*

**SIT 26-19:** WGCV to provide a minimum instrumentation list and suggested activities for CEOS recommended instrument Cal/Val sites. *OPEN – expected completion in the September timeframe.*

**CEOS 25-5:** WGISS should develop CWIC guidelines for future data partners to understand requirements - *recently completed.*

**CEOS 25-14:** CEOS Agencies to consider providing nominations for a Vice Chair for WGISS. *COMPLETE – CNES was nominated.*

**CEOS 25-16:** CEOS Agencies encouraged to consider taking on responsibility for QA4EO secretariat and website maintenance, *COMPLETE – UK has volunteered.*

**CEOS 25-18:** WGClimate and SST-VC to undertake a pilot effort in 2012 to demonstrate the approach and benefits of the contribution of the CEOS Constellations to ECV coordination – and to report to CEOS-26 with a progress statement and recommendations. *OPEN.*

**CEOS 25-20:** WGClimate to report on their initial progress towards the CEOS ECV inventory and assessments. *OPEN.*

### **Reminder of the CSS Recommendations**

Stephen Ward recalled the recommendations from the CSS that related to the VCs and WGs, including: the need for improved interface and engagement with the CEOS Strategic Implementation Team; the need for increased focus on physical delivery in support of priorities like GFOI and the Climate Architecture; and increased direction to VCs and WGs in support of CEOS priorities. Since the CSS, the NASA SIT Chair Team has taken the following steps to implement the recommendations:


- A discussion paper on CSS follow up for VCs and WGs;
- Individual (Feb) and group (8 Mar) telecons with all VCs and WGs;
- A VC and WG workshop prior to SIT-27; and
- The SIT-27 strategy session.

There was a discussion around whether broad support existed among CEOS Agencies for the CSS recommendations:

- Greg Stensaas (WGCV) commented that the VCs and WGs need direction to focus on CEOS priorities and to provide stronger feedback bottom-up to SIT;
- It was noted that the new CEOS documentation framework proposed by the CSS will provide consensus on priorities for CEOS and for the roles and responsibilities of the different CEOS bodies; it will be important for the VCs and WGs to be fully subscribed to the process of developing those planning documents; and
- Current Work Plan and CEOS IP documents give an indication as to which priorities can be expected to be the basis for future VC and WG implementation support, namely: improved coordination of space agency activities related to climate (eg FCDR/ECV development in support of the WGClimate

and the Climate Architecture); GFOI/FCT; the Carbon Strategy; JECAM (and GEOGLAM); Data Democracy; the GCI; Supersites and DRM.

The relative maturity of the requirements definition of each of these initiatives was discussed – summarised as follows:



Priority	Status & outlook
GFOI/FCT	Pre-operational. Acquisitions handled by SDCG. Urgent need for institutional support around sample national dataset development. Also cal-val aspects of Methods & Protocols.
Climate Architecture	VC & WG support assumed. ECV coordination support needed – good mapping to the VC topics. ECV survey just starting – timely to consider delivery mechanisms.
GCI & DataCORE	Underway. Need for data discovery & access tools: CWIC, IDN, HMA, portals
Supersites & DRM	Data supply underway, PIs undertake product devt & analysis. New DRM activity in discussion.
JECAM & GEO-GLAM	JECAM underway. GEO-GLAM in planning phase and developing requirements. GEO-GLAM 'might' expand rapidly.
Data Democracy	New WGCapD – planning phase.
GEO Carbon Strategy	Planning phase. Implementation actions needed from 2013 to address report recommendations.
GEO Water Strategy	Planning phase. Requirements in definition.
GEO BON	Planning Phase. Requirements in definition.

The nature of the implementation support of the most mature priorities was discussed in more detail (Climate Architecture, GFOI, and GCI).

### Climate Architecture Support from VCs and WGs

Mark outlined the plans for WGClimate over the next year or two and where VC and WG support is anticipated:

- The main outputs of WGClimate will be:
  - Strategy document defining a climate monitoring Architecture for space based observations – with external partners (CGMS and WMO) and forming the basis for future activities;
  - ECV Inventory – the broad-brush perspective, foundation for the physical representation of the Architecture;
  - Establishing a consensus “Maturity Matrix” – to assess status of ECV CDRs and monitor progress;
- WGClimate ECV assessments and sustained production roadmaps – have strong link to VCs and WGs;
- The ECV inventory questionnaire is being developed, and will be used to define current and planned capabilities and to formulate a coordinated action plan for each ECV;
- VC assistance is anticipated in: coordinating completion of questionnaires for ECV Inventory; coordinating ECV assessments - including with external domain specific partners; development of ECV sustained production roadmaps; interpretation of results from ECV Inventory – gap analysis and prioritizing response; and
- WG assistance is anticipated in: aspects linked to Cal/Val and QC, including assessments (WGCV); optimising exposure of results from ECV Inventory (WGISS and WGCapD).

There was a discussion as to whether the ECV inventory and coordination planning might lead to programmatic decisions by CEOS Agencies to address gaps and shortfalls. Mark hoped that the process would produce guidance to influence agency programmatics. Stephen Briggs suggested that it would be simplistic for CEOS to expect that something that pops out of the ECV assessment will lead directly to a



new mission – but there is no doubt that the recommendations from these sorts of groups is impacting how the data from these missions is processed, stored, and impacts the products generated, and distributed. Stephen Ward noted the original discussion within the Constellations concept paper around the idea of some form of accreditation of CEOS agency missions aiming to be identified as ‘climate standard’ and meeting GCOS Climate Monitoring Principles. John Bates suggested that CEOS encourage continuous improvement – rather than set too high a threshold which may scare Agencies off. WGClimate has been discussing a suitable maturity index.

### **GFOI/FCT**

Stephen Ward outlined the implementation support prospects for CEOS in the near future:

- The SDCG is dedicated to coordinated acquisition strategy to ensure capture of the necessary data;
- The GFOI Implementation Plan foresees sample national datasets for the pre-operational GFOI to demonstrate the kind of support countries can expect; CEOS can provide expertise and capacity in that direction (eg LSI);
- Evolution of FCT portal to monitor and report acquisitions and to allow data discovery – in support of SDCG (and perhaps GEOGLAM) – WGISS can have a role here; and
- GFOI-branded Methods and Protocols document development could use WGCV expertise.

An advisory group is being set up to develop the Methods and Protocols documents – but will need expertise, for example from WGCV during the coming year.

Stephen Briggs, as the CEOS representative to the GFOI Task Force, noted that the initiative is being reformulated and that there’s a lot of energy now. CEOS has delivered a tremendous amount of data over the last couple of years, but there is a need now to have a couple of successful National Demonstrators show the potential of the data. He suggested CEOS put pressure on GFOI to demonstrate the value of continued data supply by CEOS Agencies.

### **GEOSS Common Infrastructure (GCI) and GEO Data CORE**

Ivan Petiteville explained that the goal CEOS in relation to the GCI and GEO DataCORE is to ensure that EO data sets are easily discoverable and accessible. He outlined the opportunities to improve alignment of the VC Portals in support of the GCI, and for use of WGISS expertise around provision of CWIC, and application of the IDN. He suggested that WGCapD and WGCV also have valid roles in support of GCI and GEO DataCORE ambitions.

José Achache noted the current discussion in the GEO ExComm on the future of the GEO DataCORE (which was a time-limited fast track activity).

Steven Hosford suggested that WGISS define a specification for a VC portal template, and CEOS issue a call for agencies to take on the development of the individual VC portals. CNES would like to motivate CEOS Agencies to get more involved in producing VC portals that actually give access to the relevant data. Steven said this is a fundamental goal of the VCs – but something that CEOS is not currently doing sufficiently.

<b>SIT 27-25</b>	<b>CNES to make a presentation at WGISS-33 in Tokyo to begin more detailed discussion on the development of a VC portal template.</b>	<b>COMPLETE</b>
------------------	---	-----------------

## **17 Individual Virtual Constellation and Working Group Reports and Issues for SIT**

Each of the Virtual Constellations (VCs) and Working Groups (WGs) was invited to give its perspectives on the discussion around realignment in support of implementation of CEOS priorities and on the working realities of their situation. The highlights of the five-minute reports are summarised below.



### **WGISS (Satoko Miura, JAXA)**

Satoko identified two core competences of WGISS that will have value in implementation support:

- Portal Implementation and Enhancement Support (eg for VCs);
- Catalogue and Data Access Technologies or Protocols (eg IDN and CWIC); CEOS Agencies must register their datasets in the IDN and maintain the currency of this information over time; long term funding for CWIC must be resolved and all CEOS Agencies are encouraged to become CWIC partners; and
- WGISS is aiming to simplify its structure; participation of more agencies is needed – including ESA, ISRO, DLR, CONAE, CSIRO, and EUMETSAT.

### **Ocean Colour Radiometry (Mark Dowell, EC-JRC)**

Mark reported that:

- IOCCG has established a Standing Working Group on ECV assessment; the OCR ECV is dedicated to supporting the roadmap for sustained OCR-ECV production;
- The VC anticipates that CEOS can provide the framework to establish some basic requirements for ensuring ECVs, and can enable data exchange among CEOS Agencies; it can also provide the framework to ensure resources for INSITU-OCR, and facilitate collaboration on different projects producing time series of ECVs;
- The OCR VC needs to work with the CEOS Agencies to agree on implementation of Level 1 requirements report to enable a long-term ocean colour radiometry record; and work with IOCCG on implementation of INSITU-OCR once the strategic plan is complete and approved;
- SIT is asked to note the need for broader support on data exchange as no one CEOS Agency can be expected to perpetuate ECVs; also the need to recognize that INSITU-OCR is a critical component to achieving ECVs (as well as space data) and agencies will hopefully agree to implement this; and
- The VC requests a clearer understanding of how resources may be forthcoming at individual CEOS-member agency level to support ocean colour harmonization activities.

### **Sea Surface Temperature (Ivan Petiteville, ESA)**

Ivan reported that:

- The SST-VC is implemented through the existing Group for High Resolution SST (GHRSSST); and the SST-VC is GHRSSST's formal connection to CEOS;
- The VC sees the following opportunities: CEOS can enable fuller participation in the SST-VC by CEOS Members having SST capabilities/interests; CEOS can help ensure agency commitments are sustained over time; CEOS can help ensure agency support for travel to coordination meetings is in place; and
- The main obstacles are: SST-VC is new and Agencies need to provide active representatives; sustained funding for ongoing SST-VC/GHRSSST activities; loss of key people leading SST-VC/GHRSSST activities always a risk; the VC Leads would welcome participation of KARI, ISRO and CONAE.

Ivan noted that SIT had approved the SST-VC Implementation Plan, and he repeated the call for GHRSSST Science Committee representation.

### **Ocean Surface Topography (Eric Lindstrom, NASA)**

Eric reported that:

- The OST-VC was really a result of the IGOS-P Ocean Theme Report; there is an opportunity now to take direction from the CEOS SIT; the current OST VC is a group of agency representatives who report annually on the status of altimetry missions (“the constellation”);

- It is anticipated that the ‘new’ OST VC would report more frequently, address issues related to the Sea Level ECV, and precipitate constellation data and mission issues for CEOS SIT consideration;
- Eric suggested that CEOS can leverage greater participation in the OST Science Team (OSTST) – and asked how we might transform OSTST from a multi-agency funding-driven construct into a CEOS mechanism for international involvement (analogous to GHRSSST for SST);
- The evolution of OSTST was approved superficially at the last meeting, but the details are yet to be worked out. Four agencies support the OST VC now (NASA, CNES, EUMETSAT, NOAA). There are ample skills, resources, and connections within OSTST to address the issues of a CEOS OST VC; and
- Challenges for SIT to work include: securing commitment from lead OSTST agencies to devote some of the current resources to OST VC administration and services; involvement in OSTST from agencies that fly “complimentary missions” that are not presently formal members of OSTST (OSTST meetings are open so, in some cases, this is not a matter of participation, e.g. ESA).

#### **Ocean Surface Vector Wind (Paul Chang, NOAA)**

Paul reported that:

- Analogous to SST and OST, OSVW is trying to draw in the International Ocean Vector Winds Science Team (IOVWST) as a practical way to leverage relevant programs and resources; planning an OSVW-VC meeting during IOVWST meeting in June 2012 to engage larger OSVW community;
- The current VC seeks to coordinate existing activities and advocate as appropriate for additional activities;
- The VC needs participation of Russian and Chinese (SOA, CMA) agencies and missions; and
- OSVW would welcome clear direction from SIT in the context of an agreed CEOS implementation plan; operational requirements remain as critical for the VC as climate requirements.

#### **Land Surface Imaging (John Faundeen, USGS)**

John reported that:

- The VC will meet after SIT-27 to reinvigorate its activities and develop a new work plan which will emphasise matters like data access, product provision, portal upgrade, inclusion of radar missions;
- The VC recognizes the need to partner with the SDCG and to outreach to GFOI and GEO-GLAM activities;
- SIT can support by encouraging participation of all relevant CEOS Agencies;
- The strong USGS and INPE support for LSI is a good foundation; and
- The VC would welcome clear direction on priorities from SIT.

There will be an LSI meeting the day after SIT-27.

#### **Atmospheric Composition (Rich Eckman, NASA)**

Rich reported that:

- ACC needs to reach a firm agreement on a path forward, recognizing the scientific utility/need (particularly from the modelling community) for a harmonized total ozone record;
- ACC has other ongoing and emerging activities that shouldn’t be sidelined as a result of new CEOS Self-Study (CSS) emphasis on product generation (eg AQ constellation, volcanic ash, support to limb scattering observation coordination efforts); and
- The VC needs a clearer understanding of how resources (financial and manpower) may be forthcoming at individual CEOS-member agency level to support total ozone harmonization activities (eg augmentation to existing grants, new competitive or directed opportunities).

Mark encouraged that ACC start with an assessment of existing and planned ozone products, rather than starting off by defining a harmonised product. Rich noted the suggestion raised in Monday's workshop and will plan accordingly.

### **Precipitation (Steve Neeck, NASA)**

Steve reported that:

- CEOS provides an essential framework for supporting both the PC's data products and ECV and the sustainment and enhancement of the space-based primary data acquisition (PDA) systems;
- PC is at an early stage in aligning with CSS recommendations and new CEOS strategic direction;
- PC is well placed to support the Precipitation ECV coordination and also the GEO Water Strategy initiative;
- Increased interaction with WGClimate, WGCV, WGISS will be necessary in support of these objectives; and
- SIT can assist by advocating for the necessary resources and technical experts; as well as securing participation of CEOS Members with significant space-based observing capabilities (eg Chinese agencies).

### **Working Group on Capacity Building and Data Democracy (Jacob Sutherland, NOAA)**

Jacob reported that:

- WGCapD is newly established but has identified its main priorities: Data Democracy; possibly Supersites and DRM; possibly GEO Water Strategy;
- And activities: E-Learning Courses; Webinars; DEM Development; Capacity Building Assessment in CEOS and GEO; and
- He noted the many opportunities for communication between WGCapD and the other WGs and VCs in support of WGCapD ambitions, including on the topic of supplying subject matter experts.

### **Working Group on Calibration and Validation (Greg Stensaas, USGS)**

Greg reported that:

- He recalled the capabilities of WGCV in relation to sensor-specific calibration and validation, and biogeophysical validation;
- The WG needs support from other VCs and WGs letting WGCV know what tasks they are interested in – to date this has been ad hoc; CEOS WGs and constellation involvement needed;
- WGCV welcomes direction from SIT on the priorities for the WG in support of CEOS and GEO major initiatives; the connections between the different VCs and WGs and liaisons needs to be considered if we are to approach integrated objectives across groups;
- For a given task, each CEOS agency that is involved in the task should provide the name of its representatives that will coordinate the task within the agency and with WGCV;
- WGCV Vice Chair nominations are still needed (there is a Sept 2012 deadline, WGCV still waiting for a DLR response on their potential nominee);
- CEOS Showcases – CEOS WGs and constellation involvement needed;
- CEOS WGs, constellation, and agency involvement needed in finalizing and working QA4EO tasks; and
- QA4EO - agency resource support for secretariat and administration is being worked by UKSA/NPL.

## 18 Virtual Constellation and Working Group Issues – Discussion Session

Stephen Ward thanked all Virtual Constellation (VC) Leads and Working Group (WG) Chairs for their preparation for the SIT-27 and Workshop meetings. He summarised the opportunities and obstacles as communicated in the individual reports:

VC/WG	Opportunity	Obstacles & Issues for SIT
OCR	Ocean Colour ECV/CDR generation.	Agency implementation of VC recommendations. Resources for VC business. Responsibility for in-situ aspects of ECVs.
SST	Sea Surface Temperature ECV Pilot	Agency representation & sustained support. Travel support. GHRSSST participation important.
OST	Sea Level ECV – evolution of the OST Science Team (analogue to GHRSSST?)	Commitment and support for capacity for VC role and business. Participation – including of complimentary mission providers.
OSVW	Wind Speed & Direction ECV, continued improvements and continuity for operational services.	Need participation of Chinese & Russian missions. Looking for clear SIT plan and definition of VC role. Need advocacy to support resources.
LSI	Land surface ECVs, GFOI support.	Agency participation – including radar systems. Multiple opportunities but limited resources. Clear direction and priority setting from SIT in context of CEOS strategy and plan.
ACC	Ozone, Aerosols ECVs	Resources a serious concern. Clear direction and justification needed to advocate for realignment of existing agency resources via the VC activities. Existing work important.
PC	Precipitation ECV, GEOSS Water Strategy - Portal	Resources. Participation. Need to see agency implementation of gap analyses outcomes.

VC/WG	Opportunity	Obstacles & Issues for SIT
WGISS	Portal support. Catalogue and data access in support of delivery.	Resources. Participation... and resources. Leadership.
WGCapD	Data access, education	Newly formed.
WGCV	Cal-val aspects of ECV development. Support to GFOI Methods & Protocols and datasets development.	Resources. Leadership. Direction from CEOS.
WGClimate	ECV development, Climate Architecture	

Stephen Ward called out the following recurring issues for discussion and further attention by SIT and CEOS in strategy planning:

1. There appears to be a broad recognition of the opportunity and need for CEOS VCs and WGs to support delivery – notably demonstrating the societal benefits of the GEOSS in its final years of the 10-year plan.
2. On resources – CEOS needs more to do more. A new geometry and shape (eg SDCG) may be needed for CEOS to have a valid and recognised role in the implementation roles such as ECV support, and GFOI datasets.
3. CEOS delivery teams such as VCs and WGs must leverage other groups and resources, including some ‘different’ space agency programme budgets (beyond international coordination budgets and closer to production budgets).
4. Participation – the absence of China, Russia and India was commonly cited.

5. Incentives are needed to have national missions contributing to CEOS goals.
6. Direction: top-down priority setting and objectives are requested from SIT by a number of groups.

### Opportunity

It was noted that GEO must strive towards some high profile achievements in the closing years of its 10-year plan to ensure political and financial support for its continuation post-2015. CEOS has a role in support of delivery and must be pro-active in defining and progressing the outcomes.

Stephen Ward noted that the planning framework documents would be realised by the SIT Chair Team in the coming 18 months – with a view to completion by late 2013. It is imperative that the VCs and WGs are fully engaged in that process. Meantime, there are real opportunities for the VCs and WGs to continue to align in support of significant pre-2015 outcomes that will support the continuation of the GEOSS and assist major CEOS initiatives. These include the ECV pilot activities of SST VC (and OCR VC), and the data delivery needs around the GFOI and National Demonstrators. SIT Chair Team will pursue the further definition of these opportunities with the relevant groups.

<b>SIT 27-21</b>	<b>SIT Chair Team will work with Virtual Constellations and Working Groups to further define opportunities and approach to implementation targets discussed at SIT-27. And will ensure engagement of Virtual Constellations and Working Groups in the development of the new planning documents.</b>	<b>September 2012</b>
------------------	--	-----------------------

Mark Dowell stressed the idea of going forward with ECV pilots, not necessarily because they are a priority, but to develop a process template, aside from the need to await the outcome of the ECV inventory to decide on where to focus attention.

### Participation

Stephen Ward noted that the *tour de table* on day one of SIT-27 had generated a wish list from each VC and WG for those agencies needed in support of the various groups and objectives. Brent Smith expressed the hope that the ideas that were captured during the participation discussion on day one would be acted upon. For example, CNES and EUMETSAT contacts with China's SOA. Mike Freilich confirmed that he intends to use the participation wish list to inform the way forward on participation and to define specific actions in support of each VC and WG.

Mark suggested that it would be a useful exercise to develop a matrix of key contributing missions, mapped against the responsible agencies. Wang Jinsong (CMA) noted the desire of many CEOS VCs for engagement of relevant Chinese missions and agencies. He observed that arrangements for individual missions can be complex and offered to help clarify where needed regarding the identification of relevant Chinese agencies in the proposed matrix.

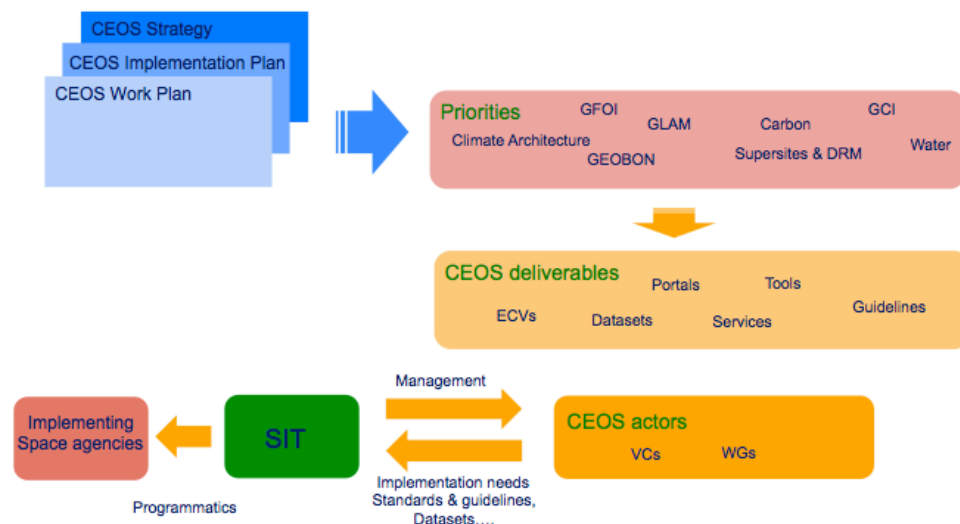
<b>SIT 27-22</b>	<b>SIT Chair Team will develop a CEOS Virtual Constellation/Working Group mission/agency participation wish-list matrix as the basis for engaging CEOS Agencies and missions.</b>	<b>April 2012</b>
------------------	---	-------------------

Greg Stensaas noted that WGCV has invested a lot into defining the components where they can work with the VCs. Some kind of a process for the WGs and VCs to work together would be helpful to pull these things together. He noted that one in about every three WGISS meetings is joint with WGCV – and this may no longer be sufficient to encourage the full spectrum of interaction among groups. Mike suggested that VCs and WGs should be speaking together with one another, and suggested an action for VCs and WGs to define how they want to do that. He would like to see those ideas bubble up from the WGs and VCs. He noted that the planning framework documentation would need to consider how more integrated objectives could be accomplished and these processes will contribute to that planning.

<b>SIT 27-23</b>	<b>Working Group Chairs and Virtual Constellation Leads, coordinated by the SIT Chair Team, to develop a short paper brainstorming ideas on improved communication among groups in support of more integrated CEOS objectives.</b>	<b>Jun 2012</b>
------------------	--	-----------------

### Direction and Management Framework

Stephen Ward recalled the new suite of planning documents in definition and how these will identify priorities for VC and WG support. Per CEOS Self-Study (CSS) recommendations, we can anticipate inclusion of integrated ‘all-CEOS’ effort on high-level initiatives and emphasis on delivery. We need to consider how to organise our resources in support of these outcomes and VCs and WGs will be part of the process and their interests will be considered when developing the high-level initiatives.



Stephen Ward noted that the effort invested by SIT Team in communicating with and preparing VCs and WGs for the La Jolla meetings is symptomatic of the desire to sustain a two-way dialogue with VCs and WGs in support of the new planning and implementation framework. Mike confirmed that he intends to continue the series of quarterly telecons with VCs and WGs and that Stephen Ward has volunteered to compile issues arising from those calls and other communications from the VCs into a brief report for the monthly CEOS SEC telecons, so that VCs are represented better in SEC deliberations (as WGs have been). Further, individual VCs may be invited to report on urgent or priority topics in person at selected SEC telecons.

<b>SIT 27-24</b>	<b>SIT Chair Team to arrange for monthly Virtual Constellation updates to CEOS SEC telecons.</b>	<b>Apr 2012</b>
------------------	--	-----------------

SIT Chair Team will consider future opportunities for meetings focused on the needs of VCs and WGs, reflecting on the lessons from the La Jolla meetings. It is recognised that existing work and challenges need to be continued, whilst studying the alignment of the various CEOS groups in support of the CSS recommendations.

### Next Steps

Stephen Ward wrapped up the session, noting that SIT Chair Team will take stock of the discussions in La Jolla and plan the next steps in collaboration with the VC and WG leadership. CEOS needs to closely monitor the evolution of the definition of requirements of the various ‘big tickets’ out there – such as climate, forests, food, water, carbon - so that we are prepared to respond as they mature and are ready for



CEOS engagement. Some work in support of the climate architecture, GFOI, and soon GEOGLAM, can be progressed and steps will be taken to organise our approach.

Stephen Briggs highlighted the emergence of the SDCG as symptomatic of the required change in scope and emphasis of CEOS and anticipated that SDCG would be required increasingly as these major initiatives define their observing needs. He noted the need to clarify the role of LSI in this context and John Faundeen (LSI) repeated his request for direction on the roles for LSI and feedback from SIT.

In response to a question from Adam Lewis (Australia), Mike noted that the three CEOS planning documents will be inter-related and influence one another, and that is informed by and communicated to the rest of the process. We will see far more of these documents in draft form in the next 18 months.

Mike concluded by noting how much time and effort is going into the VCs and WGs and expressed appreciation on behalf of CEOS and all of its agencies.

## **19 Wrap-up**

Mike Freilich thanked all SIT participants on behalf of the SIT Chair Team, and on behalf of the Troika. His closing remarks were that this meeting tried a different approach. The feedback from participants throughout the meeting was that the substance discussed, the actions described, and the discipline that CEOS imposed on itself might stand us in very good stead to pursue the dual objectives – external activities and internal activities.

The next formal meeting held by SIT will be the SIT Technical Workshop, planned for 11<sup>th</sup> and 12<sup>th</sup> of September in the Washington, D.C. area.

**SIT-27 Attendees**

Organisation	Participant	Organisation	Participant
ASI	Stefano Bruzzi	NASA	Michael Freilich
CMA	Wang Jinsong	NASA	Christine Bognar
CNES	Pascale Ultré-Guérard	NASA	Eric Lindstrom
CNES	Steven Hosford	NASA	Dennis McSweeney
CONAE	Ana Medico	NASA	Diane Wickland
CSA	Luc Brulé	NASA	Steven Neeck
CSA	Yves Crevier	NASA	Richard Eckman
CSA	Marie-Josée Bourrassa	NASA (SEO)	Brian Killough
CSIRO (GA)	Adam Lewis	NASA (SEO)	Shelley Stover
CSIRO (GA)	David Hudson	NASA (SEO)	Kim Keith
EC/JRC	Mark Dowell	NASA (SEO)	Jen Keys
ESA	Stephen Briggs	NASA	Stephen Ward
ESA	Ivan Petiteville	NASA	George Dyke
EUMETSAT	Robert Husband	NOAA	John Bates
EUMETSAT	Paul Counet	NOAA	Brent Smith
GCOS	Adrian Simmons	NOAA	Paul Chang
GEO	José Achache	NOAA	Jacob Sutherlun
GEO	Humbulani Mudau	NOAA (DCEO)	Kerry Sawyer
INPE	Julio Dalge	NSC	Per-Erik Skrovseth
INPE	Márcia Alvarenga	USGS	Jean Parcher
ISRO	Kiran Kumar Seelin	USGS	Greg Stensaas
ISRO	P G Diwakar	USGS	John Faundeen
ISRO	Vivek Singh	USGS	Tom Holm
JAXA	Makoto Kajii	USGS (CEO)	Tim Stryker
JAXA	Takao Akutsu	WMO	Barbara Ryan
JAXA	Takashi Moriyama		
JAXA	Osamu Ochiai		
JAXA	Satoko Miura		
JAXA	Riko Oki		

## CEOS SIT-27 Actions

### V1.1

No.	Action	Due date
SIT 27-1	CEOS Agencies to inform Mark Dowell on who from their Agency plans to attend COP and/or SBSTA events in 2012, and provide Mark with any specific agency inputs for SBSTA.	May 2012
SIT 27-2	Mark Dowell, in coordination with SEO, will continue to coordinate preparation of CEOS engagement at COP-18 and the related SBSTA meetings, including the application for side events.	December 2012
SIT 27-3	CEOS Chair will confer with CNES to arrange a letter confirming appointment of Pascal Ultré-Guérard as SIT Vice Chair and outlining	April 2012

	the expectations for the role.	
SIT 27-4	CEOS Agencies encouraged to nominate candidates to serve as WGISS Vice-Chair.	<b>COMPLETE</b> Richard Moreno from CNES nominated
SIT 27-5	CEOS Chair will issue a call for nominations for CEOS agency candidates to serve as CEO and DCEO from late 2012 (nominations due by end May with a view to a decision in July 2012).	April 2012
SIT 27-6	CEOS Chair will write to José Achache expressing appreciation of CEOS and its agencies for his dedicated service in support of GEO and CEOS objectives.	April 2012
SIT 27-7	CEOS to establish a GEO Post-2015 strategy committee (Chair – Brent Smith) to develop and promote substantive CEOS positions and inputs in connection with future deliberations of the GEO Post-2015 Working Group (Note the GEO WG is already involved in ongoing deliberations so CEOS inputs are required in the May time frame, well before September).	May 2012
SIT 27-8	SIT Chair to write to the SST-VC team to confirm approval of their Implementation Plan and to urge their progress towards the first milestones as scheduled in the IP.	April 2012
SIT 27-9	SIT Chair to circulate a call for CEOS Agencies to nominate representatives to the SST VC Team – in support of SST-VC IP objectives.	April 2012
SIT 27-10	CEOS Members to provide feedback to the CEOS Carbon Task Force on the chapter drafts of the CEOS Carbon Strategy circulated ahead of SIT-27.	April 2012
SIT 27-11	An <i>Ad Hoc</i> CEOS team to take responsibility for working with GEOGLAM to further develop the space-based observations component suggested by the draft Work Plan. Initial membership should include Yves Crevier, John Faundeen, Brian Killough, Prasad Thenkabail, and Stephen Ward.	CEOS Plenary
SIT 27-12	ESA will explore with SDCG the possibility of tasking/augmenting the SDCG group to undertake a preliminary global acquisition strategy in support of GEOGLAM needs. SDCG tasking would begin following approval at Plenary.	CEOS Plenary
SIT 27-13	Building upon the outcomes of the user requirements and space data coordination activities, responsible CEOS team will provide their analysis and recommendations to CEOS leadership on further steps vis-à-vis the GEOGLAM initiative – including a plan for the pre-2015 outcomes.	SIT-28
SIT 27-14	The CEOS Rio+20 coordination group, led by CEOS Chair, to provide inputs on the planned key CEOS message at Rio+20 and ensure good coordination with GEO's Rio+20 organizers.	10 <sup>th</sup> April 2012
SIT 27-15	The CEOS Rio+20 coordination group, led by CEOS Chair, to coordinate with GEO on the CEOS/GEO booth layout and contents, confirm staffing availability, and arrange speakers as appropriate.	June 2012
SIT 27-16	SEO to work with JAXA on creating the necessary poster materials for the CEOS/GEO booth at Rio+20.	June 2012

<b>SIT 27-17</b>	<b>CEOS Troika, under the leadership of the CEOS Chair, to formulate an approach to Chinese and Russian agency engagement in CEOS. CEOS SEC will be kept apprised of progress.</b>	<b>CEOS Plenary</b>
<b>SIT 27-18</b>	<b>CNES to advise the Troika on the potential for CEOS engagement with SOA based on their ongoing bi-lateral joint activities.</b>	<b>April 2012</b>
<b>SIT 27-19</b>	<b>CEOS SIT Chair to communicate the final set of “Essential Questions” to the CEOS community.</b>	<b>April 2012</b>
<b>SIT 27-20</b>	<b>CEOS SIT Chair, in consultation with the CEOS community, to prepare a set of draft responses for the “Essential Questions” for presentation at the SIT Technical Workshop, and eventually for presentation for endorsement at the CEOS Plenary in India.</b>	<b>CEOS SIT Technical Workshop September 2012</b>
<b>SIT 27-21</b>	<b>SIT Chair Team will work with Virtual Constellations and Working Groups to further define opportunities and approach to implementation targets discussed at SIT-27. And will ensure engagement of Virtual Constellations and Working Groups in the development of the new planning documents.</b>	<b>September 2012</b>
<b>SIT 27-22</b>	<b>SIT Chair Team will develop a CEOS Virtual Constellation/Working Group mission/agency participation wish-list matrix as the basis for engaging CEOS Agencies and missions.</b>	<b>April 2012</b>
<b>SIT 27-23</b>	<b>Working Group Chairs and Virtual Constellation Leads, coordinated by the SIT Chair Team, to develop a short paper brainstorming ideas on improved communication among groups in support of more integrated CEOS objectives.</b>	<b>Jun 2012</b>
<b>SIT 27-24</b>	<b>SIT Chair Team to arrange for monthly Virtual Constellation updates to CEOS SEC telecons.</b>	<b>Apr 2012</b>
<b>SIT 27-25</b>	<b>CNES to make a presentation at WGISS-33 in Tokyo to begin more detailed discussion on the development of a VC portal template.</b>	<b>COMPLETE</b>